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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/902,809 07/30/97 SCHUEGRAF K 303.278US1

MM21/0427  
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EXAMINER
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NADAV, O

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 04/27/99

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
**08/902,890**

Applicant(s)  
**Eitan**

Examiner  
**ORI NADAV**

Group Art Unit  
**2811**



☒ Responsive to communication(s) filed on Apr 12, 1999

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 23-31 and 36-44 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 23-31 and 36-44 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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### **DETAILED ACTION**

Since the examiner inadvertently failed to indicate that the office action (paper 12) mailed on 1/11/99 was final, the advisory action mailed on 4/19/99 has been withdrawn.

#### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the layer of oxide must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 23-31 and 36-44 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled

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in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claims 23-25, there is no support for the limitation “a spacer....terminating at the boundary wherein the spacer is not in contact with the oxide active layer” in the specification as to how the spacer can terminate at a boundary with the oxide active layer and not be in contact with the oxide active area.

Regarding claims 25, 29-31, 38-44, there is no support in the specification for a layer of silicon oxide deposited on the semiconductor device such that enabling one skilled in the art to which it pertains.

Regarding claims 26-31, 36-41 and 44, there is no support in the specification for a layer of gate oxide deposited under the gate such that enabling one skilled in the art to make and/or use the device.

Regarding claims 26-31 and 36-41, there is no support for the limitation “a feature over the first layer of oxide” and “a feature protruding from the first layer of oxide” in the specification in such a way as to enable one skilled in the art to make and/or use the invention.

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Regarding a smile formed at the boundary between the feature and the oxide active area or the first layer of oxide in claims 25, 29-31 and 38, there is no support in the specification of any boundary between the feature and the first oxide layer.

5. Claims 26-31 and 36-41 and 44 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not describe a layer of gate oxide under the gate in such a way as to convey to one skilled in the art the function ability of the semiconductor device without a gate oxide.

6. Claims 26-31 and 36-41 and 44 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2173.05(l). The omitted structural cooperative relationships are: an oxide active area and a first layer of oxide

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7. Claims 23-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "the feature having a surface" is not clear since it does not identify the surface of the feature.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 23, 25-27, 29, 30, 36, 38, 42 and 44, insofar as in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al. in view of Manning (5,804,838).

Ho et al. teach substantially the entire claimed structure, as applied to claim 26 above, including a gate electrode comprising a layer of polysilicon 16, and a dielectric 20, a selectively deposited spacer, only on the sidewalls of the gate, and a layer of oxide 22 deposited over the gate electrode.

Ho et al. do not teach a layer of oxide formed on a silicon nitride spacer and the first layer of oxide.

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Manning teaches in figure 10 a layer of silicon oxide 36 deposited on a semiconductor device, wherein spacers 48, 50 comprises silicon nitride interposed between the layer of the silicon oxide and the gate (column 5, lines 20 and 51-53). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to deposit a layer of a silicon oxide on a silicon nitride spacer and the first layer of oxide in Ho et al.'s device in order to provide better protection for the device by a method well known in the art.

10. Claims 24, 28, 31, 37, 39-41 and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al. and Manning as applied to claims 23, 25-27, 29, 30, 32, 33, 35, 36, 38 and 42, above, and further in view of Gonzalez.

Ho et al. and Manning teach substantially the entire claimed structure, as above, except a gate comprising a tungsten silicide layer interposed between the polysilicon and the dielectric layers. Gonzalez teach in figure 2 tungsten silicide layer 22 (column 4, line 63) interposed between the polysilicon 20 and the dielectric 24 layers.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to deposit tungsten silicide layer interposed between the polysilicon and the dielectric layers in Gonzalez's device, because it is known in the art to use tungsten silicide layer on a polysilicon layer in order to provide good contact to the gate.

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***Response to Arguments***

11. Applicant argues on page 6 that active area 215 is an oxide layer. Active layer can not be categorized as an insulating layer such as a gate oxide layer. It is well known in the art that gate oxide separates and insulates the active areas from the gate electrode.

12. In response to applicant's arguments on pages 9-10 against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

***Conclusion***

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,



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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.**

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is (703) 308-8138. The Examiner is in the Office generally between the hours of AM to PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**

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*Tom Thomas*

Tom Thomas  
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Technology Center 2800

O.N.

April 26, 1999